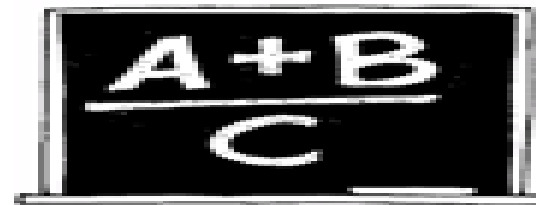


Summer Math Calendar

(Entering) Fifth Grade



Get ready to discover math all around you this summer! Just as teachers encourage students to continue reading throughout the summer to solidify and retain reading skills, we feel the same attention should be given to mathematics. Regular practice over the summer with problem solving, computation, and math facts will maintain and strengthen math gains made over the school year. The Math Specialists of Brookline have created this summer math calendar to provide your child and your family with a variety of math activities to explore this summer.

Inside you'll find creative activities that include measuring and counting everyday objects, math games, riddles, basic facts practice, math web sites and math literature books (available through Brookline's public libraries). The activities reflect a range of difficulty with the intent that your child can choose the activities that are at a "just right" level. The goal is for your child to have fun thinking and working collaboratively with you while communicating his/her mathematical ideas. While you are working on these activities, ask your child **how** he found that solution or **why** she chose that strategy. These activities help reinforce the concepts/skills your child learned this past year so that s/he can retain them over the summer.

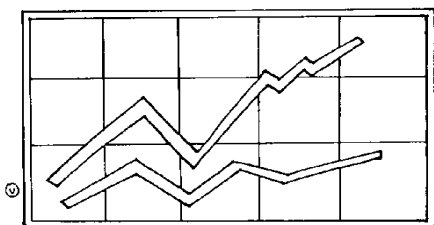
This packet consists of 2 calendar pages, one for July and one for August, an alternate summer math calendar as well as directions for math games to be played at home. (Note: a substitute for numeral cards can be a regular deck of cards without the face cards or Uno cards.) Each month's activities are organized into 28 "math boxes." ***You can choose which activities you'd like to complete on which day.*** We encourage your child to complete 20 math boxes each month. After completing a box, color it in. In September return the calendar, with your signature, to your child's new teacher.

We recommend that you integrate an average of 15-20 minutes of math activities into your child's day, including completing the enclosed activities *and* reviewing basic facts. Number facts can be practiced and reinforced through repeated use in games, real-life problems, songs, rhymes, and cards. Help your child to identify "FACTS I KNOW" and the "FACTS I AM WORKING ON." Think of regular and convenient times to review these facts, such as waiting in line, driving in a car, riding the train, reading time, etc.

We hope that you will enjoy the activities, extend them, create new ones and have fun!

We welcome your feedback on the calendar (angela_allen@brookline.k12.ma.us).

Public Schools of Brookline
K-8 Mathematics Department
Revised Spring 2010



July

Fifth Grade Calendar

Brookline



Directions: Complete **any** 20 math boxes this month. Color in the box after your complete it. Return this sheet to school in the fall.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Play Pan Balance-Shapes (Fixed Values) on the web.* Put 1 purple ▲ and 1 yellow ♦ on the right side. Find 3 combinations to balance the scale.	About how long does it take on the commuter rail from Needham Heights to Back Bay? Is the time constant for all trains? What factors affect the time? See www.mbta.com	Read ▼ Greedy Triangle by Marilyn Burns Go on a hexagon scavenger hunt. Where can you find hexagons? Make a pattern with hexagons.	Using the GLOBE or weather.com , record the forecasted high temperatures for the next 5 days. What is the mean, median, mode and range for your data?	Over the next 5 days, record the actual high temperature. Make a bar graph of the actual high temperature over these 5 days.	Compare the forecast with the actual temperatures. What are 5 similarities or differences between the data?	Read • One Grain of Rice by Demi. Calculate how many grains of rice she will receive on day 18. How many will she have altogether?
It costs \$1.70 to ride the T. If you ride 2 times a day for the month of July, how much would you spend?	Play Product Game on the web.* Read the directions carefully. Move the rectangles at the bottom to try to get 4 products in a row.	What number am I? I am > 3,449 and I am < 3,502. I have a 1 in my ones place and a zero in my tens place. Create your own number riddle.	Read • Lemonade for Sale by Stuart Murphy Make a bar graph, by days of week, of the number of dogs you see each day.	Begin with 35 and count by 7s to 77. Begin with 36 and count by 6s to 66.	Play a game like ΔYahtzee or Mastermind .	$18 \div 3$ $21 \div 3$ $24 \div 3$ $27 \div 3$ $30 \div 3$ $33 \div 3$ What's your strategy?
Write 4 number equations using the numbers: 8, 56, 7. (hint: 2 multiplication and 2 division equations)	$20 \div 4$ $24 \div 4$ $28 \div 4$ $32 \div 4$ What's your strategy? Skip count by 4's forward & backward.	Play a game. Close to 1,000 (see directions)	25×7 25×8 25×9 25×10 25×11 What's your strategy?	Play Fraction Game on the web.* How many moves did it take to get all the red markers to the right side? Can you beat your score?	Imagine you are sharing 1 giant cookie among yourself and 5 friends. If you share it fairly, what fraction will each friend receive?	At the grocery store, estimate how many bananas will weigh one pound. Check your estimate. What's the cost to buy 2 lbs of bananas?
Play a game. Factor Game (see directions)	Make a meter stick out of materials around your home, using a ruler as a benchmark. What can you find that is 1 meter long? ½ meter? 2 meters?	Start with 3,542. Add 100 more. Subtract 50. Add 8. What's your number? Is this a square number? Make your own number problem.	$12 \div 2$ $24 \div 2$ $36 \div 2$ $48 \div 2$ $60 \div 2$ What's your strategy? Do you see a pattern?	Jose swam 3 laps each day and Micah swam four times as many laps as Jose each day. How many laps did Micah swim in 7 days?	6×6 6×7 6×8 7×8 7×9 9×6 9×8 What's your strategy?	Sophia runs twice as fast as her friend Mia. If Mia runs 3mph, how long will it take Sophia to run 6 miles? 9 miles?

* Website Directions: Go to: illuminations.nctm.org Click on **ACTIVITIES**. Click on **3-5** and press **SEARCH**.

grade 4.July calendar.10

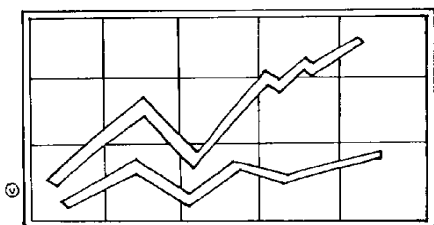
• Book is available through Brookline's public libraries or Minuteman library network (▼)

Δ These games are available in stores.

Parent's Signature: _____

Child's Name: _____

Created by the Math Department, Public Schools of Brookline, Revised Spring 2010



August Fifth Grade Calendar Brookline



Directions: Complete **any** 20 math boxes and color in the box after you complete it. Return the Math Calendar to school in the fall.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Play a game. Fraction Dice (see directions)	Show 4 different ways to make \$1.56 using coins and/or bills.	At the playground, time 5 children running across the field (or time 1 friend 5 times). Make a line graph of their finishing times.	$54 \div 6$ $48 \div 6$ $42 \div 6$ $36 \div 6$ What's your strategy? Skip count by 6s forward & backward.	What number is 10 more than 4,492? What number is 300 more than 4,830? What number is 500 more than 4,654?	What's the rule for my input/output machine? Input 2 4 10 Output 5 9 21	Play Product Game on the web.* Read the directions carefully. Move the rectangles at the bottom to try to get 4 products in a row.
Mia drank 3 quarts of water at the playground. How many more cups does she need to drink to make a gallon? How many ounces is that?	Play The Factor Game on the web.* Choose Game Type: 30 What's your score if you play against the computer? Against a partner?	What number am I? The digits in my number are 3, 8, 4, 1. I am odd. I have a 4 in my hundreds place. I am less than 2,000. Create your own riddle.	Read •Divide and Ride by Stuart Murphy How can 13 children be arranged on a park ride that seats 2? 3? 4? 5? How many kids are left waiting?	Find the area of your bedroom floor. What room in your house could have twice the area of your bedroom? Half the area of your bedroom? Check.	Read •Anno's Mysterious Multiplying Jar by M. Anno If there are 2 towns with 8 schools and 11 doors in each school. How many doors in all?	8×6 8×7 8×8 8×9 What's your strategy? Skip count by 8s forward & backward.
$35 \div 7$ $42 \div 7$ $49 \div 7$ $56 \div 7$ $63 \div 7$ What's your strategy? Skip count by 7s forward & backward.	Go on a 3-D scavenger hunt. How many cylinders, pyramids, cubes, rectangular prisms, and cones can you find today? Create a table with your data.	Play a game. What's the Difference? (see directions)	Listen carefully and tell me which numbers I am missing: 7, 14, 21, 35, 42, 56 Create your own trick pattern.	Read •G is for Googol by David M Schwartz (pp. 26-27) Make a mobius strip. What happens when you try to paint or color just one side?	Kate's garden is in the shape of a square with a perimeter of 32 feet. What is the area of her garden? _____	Determine the pattern. What comes next in each pattern? • 1, 1, 2, 4, 7, ____ • 4, 9, 16, 25, ____, 49, 64 Make your own pattern.
Measure your face's height & length in inches. Estimate the fraction of your length of face compared to length of your body. Compare yours with 4 friends.	Play a game like Δ Yahtzee or Mastermind.	$72 \div 8$ $64 \div 8$ $56 \div 8$ $48 \div 8$ What's your strategy? Skip count by 8s forward & backward.	Play Fraction Game on the web.* How many moves did it take to get all the red markers to the right side? Can you beat your score?	Draw a design using 3 different shapes. See if your partner can make the same design just by listening to your directions.	7×6 8×6 8×7 9×7 6×9 8×9 Which is the hardest?	Would you rather have your height be made of a stack of nickels, or quarters lined up end to end? How much would you be worth?

* Website Directions: Go to: illuminations.nctm.org Click on **ACTIVITIES**. Click on **3-5** and press **SEARCH**.

grade 4.Aug calendar.10

• Book is available through Brookline's public libraries or Minuteman library network (▼)

Δ These games are available in stores.

Parent's Signature: _____

Child's Name: _____

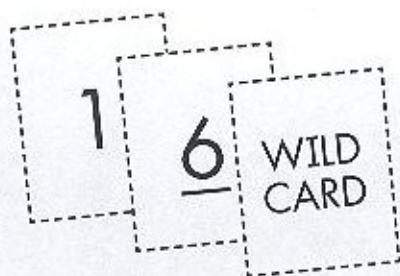
Created by the Math Department, Public Schools of Brookline, Revised Spring 2010



Close to 1,000

You need

- Digit Cards
(1 deck per pair)
- *Close to 1,000*
Recording Sheet



Play with a partner.

- 1 Deal out eight Digit Cards to each player.
- 2 Use any six cards to make two numbers. For example, a 6, a 5, and a 2 could make 652, 625, 526, 562, 256, or 265. Wild cards can be used as any digit. Try to make two numbers that, when added together, give you a total that is close to 1,000.
- 3 Write these numbers and their total on the *Close to 1,000* Recording Sheet. For example, $652 + 347 = 999$.
- 4 Find your score. Your score is the difference between your total and 1,000.
- 5 Put the cards you used in a discard pile. Keep the two cards you did not use for the next round.
- 6 For the next round, deal six cards to each player. Make more numbers that have a sum close to 1,000.
- 7 When you run out of cards, mix up the discard pile and use them again.
- 8 After five rounds, add your scores to find your final score. The player with the lower final score wins.

Variation

Write the score with plus and minus signs to show whether your total is less than or greater than 1,000. For example, if your total is 999, your score is -1 . If your total is 1,005, your score is $+5$. The total of these two scores is $+4$. Your goal is to get a final score for five rounds that is as close to 0 as possible.

Name _____

Date _____

**Landmarks and Large Numbers*****Close to 1,000*** Recording Sheet

Game 1	Score
Round 1: _____ + _____ = _____	
Round 2: _____ + _____ = _____	
Round 3: _____ + _____ = _____	
Round 4: _____ + _____ = _____	
Round 5: _____ + _____ = _____	
Final Score	_____

Game 2	Score
Round 1: _____ + _____ = _____	
Round 2: _____ + _____ = _____	
Round 3: _____ + _____ = _____	
Round 4: _____ + _____ = _____	
Round 5: _____ + _____ = _____	
Final Score	_____



Factors

SKILL AREAS:

factoring, multiples, division, multiplication, prime and composite numbers, addition

Object: Players take turns giving and receiving numbers to factor. They score points equivalent to the numbers given and the factors identified.

Number of Players: two (or whole class in two teams)

Materials: paper and pencil

Preparation: Have the players make a playing board, as shown below, or provide them with a copy of the playing board on page 21. The playing board has a scoring column for each player on opposite sides of the paper, and the numbers from 1 to 30 in an array in the center.

Playing

1. Players alternate roles as picker and factorer.
2. On a turn as picker, a player crosses out any legal number on the playing board. (A legal number is any number that is not crossed out and which has *at least one* factor that also has not been crossed out.) The picker writes that number in his scoring column.
3. The factorer then crosses out any of the factors of the number the picker crossed out. The factorer writes all of these numbers in his scoring column. For example, if the picker crosses out 30 as the first play of the game, the factorer can cross out 1, 2, 3, 5, 6, 10 and 15. The factorer may choose to not cross out a factor of the number.
4. Neither player can reuse a number that has been crossed out.
5. Players switch roles after each round.

6. The game ends when there are no more legal numbers to cross out. Players then add the numbers in their columns to find their total score.

Winning

The player with the highest total score wins.

Playing Variations

- Have players keep cumulative sums of the numbers they acquire, rather than waiting until the end of the game to find the sum of the numbers.
- Use other numbers on the playing board; for example, 1 to 20, 1 to 35, 1 to 40.
- Allow the picker to cross out illegal numbers (numbers that have no remaining factors on the playing board). Add the rule that if the picker crosses out an illegal number, then the factorer (who now has no numbers to cross out) gets two consecutive turns as picker.

Emilio	Factors	Sonya
30	1 2 3 4 5	1
	6 7 8 9 10	2
	11 12 13 14 15	3
	16 17 18 19 20	5
	21 22 23 24 25	6
	26 27 28 29 30	10
		15



Factors

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

Factors

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

Fraction Dice

Object: Players roll dice to determine the numerator and denominator of a fraction. Players compare the fractions. The player with the larger fraction gets a point for that round. The player who gets 10 points first is the winner.

Number of Players: 2 – 4

Materials: Dice (or cards marked 1 – 6), paper and pencil for recording the fractions and recording the scores.

Playing:

1. During a turn, each player rolls two dice (or one die two times) to create a fraction. The smaller number rolled must be the numerator, and the larger number is the denominator. Each player writes the fraction on a paper in front of them.
2. The players then compare their fractions to see whose is largest. The player with the largest fraction says, "Mine". If more than one fraction are equal to each other, more than one player can say, "Mine". The player(s) with the largest fraction gets a point for that round.
3. The other players check to make sure it is (they are) the biggest. If another player believes the fraction(s) is (are) not the largest, that player can challenge. With a challenge, if the one who said, "Mine" was incorrect, the challenging player gets the point for that turn and another point for correctly explaining why it was not the largest. If the one who said, "Mine" was correct, that player can get an extra point for explaining why it was the largest.
4. Play continues until one of the players has 10 points.

Modifications:

*Players can choose to have either number as the numerator or denominator (allowing for improper fractions).

*When playing with cards, make sure to have 4 of each number (1 – 6) and shuffle all the cards back in after each round. Players then pick two cards to use to make their fraction.

What's the Difference?

Object: Players roll dice to determine two three-digit numbers then find the difference between them. The difference is their score. Players add on to their scores with each round. The player who has 2000 points first is the winner.

Number of Players: 2 – 4

Materials: Dice, number line work sheets, paper and pencil for recording the scores.

Playing:

1. Players take turns. During a turn, a player rolls three dice (or one die three times) to construct a three-digit number. The player then does this again to make a second three-digit number.
2. The player then finds the difference between the numbers. Players may use a number line, compute on paper, or solve it in their heads.
3. The player reports the difference and records the score for that turn. If another player believes the difference found is not correct, that player can challenge. If the difference was incorrect, the challenging player gets the points for that turn (the correct difference between the two rolled numbers).
4. Players continue play clockwise around the circle. The player to collect 2000 points first is the winner.

Modifications:

*Players can construct two two-digit numbers and find the difference. In this version, the player who gets 200 points first is the winner.

*Players can solve only using a number line or by solving mentally. Traditional algorithms are not allowed.

Open Number Line Recording Sheet

Addition/Subtraction
BLM 11

Station: What's the Difference

Name & Date: _____
